

Name \_\_\_\_\_

Due: Monday, May 18th

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1. Solve the following quadratic:  $8x^2 + 2x = 3$

2. Factor  $144m^2 + 1$

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3. Find the solutions of  
 $-3(x+2)^2 + 5 = 20$

4. Suppose a ball is thrown from a height of 15 meters with an initial velocity of 20 m/sec. The position of the ball is given by  $h = -4.9t^2 + vt + h_0$ . What time does it hit the ground?

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5. Divide:  $(x^4 - 2x^3 + 4x^2 - 5x - 45) \div (x - 3)$

6.  $f(x) = 5x^3$ ;  $g(x) = -2x + 7$ ;  $h(x) = 4x^2 - 3x$   
Find  $h(g(x))$

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7. Use Pascal's Triangle to expand  $(x^2 + 4y)^3$

8. Classify the product by degree and number of terms  $(3x^2 - 5x - 4)(x + 3)$

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9. Factor  $125k^3 + 8$

10. Find all the roots  $f(x) = x^3 + 3x^2 + 4x + 12$

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11. Graph  $f(x) = x^4 - 4x^3 - 3x^2 + 10x + 8$  and find the interval of decrease.

12. Write an equation of a polynomial given the roots  $x = 5, \pm 2i$

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13. Add  $\frac{3x}{2x-2} + \frac{x-2}{4x}$

14. Divide  $\frac{2x^2 - 7x - 4}{x^2 + 9x + 14} \div \frac{3x - 12}{x^2 - 4}$

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15. Solve  $\frac{1}{x+6} = \frac{6}{x^2-36} - \frac{1}{x-6}$

16. Solve  $\sqrt{x+23} = x+3$

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17. Solve  $2(x+2)^{\frac{1}{3}} = -8$

18. Simplify  $2x\sqrt[3]{6x^2yz} \cdot z^2\sqrt[3]{12xy^4z}$

19. Find the hole

$$f(x) = \frac{x^2 + 3x - 18}{x^2 - 3x}$$

20. State the x-intercepts and the y-intercept

$$f(x) = \frac{x^2 + 2x - 8}{x^2 - x - 2}$$

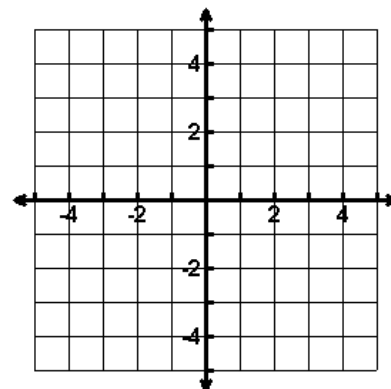
21. Determine the horizontal and vertical asymptotes of  $f(x) = \frac{3x+9}{x-3}$

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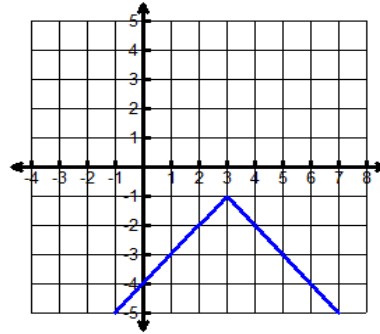
22. Write an equation for a cubed root function given the following characteristics: right 6, vertically stretch 3, reflect over the y-axis

23. Find the sum of the first 10 terms of the sequence 2, 8, 32, 128, ....

24. Graph  $f(x) = \begin{cases} (x-1)^2 & x < 2 \\ -x+3 & x \geq 2 \end{cases}$



25. Write the equation of the given absolute value graph



26. Condense the following:

$$\frac{1}{2}\log x + 2\log y - \frac{2}{3}\log 27 + 4\log z$$

27. Solve:  $\log_4(x+11) + 7 = 10$

28. Find the inverse  $f(x) = 4^{x-3} + 5$

29. If \$7700 is invested at a rate of 4.1% compounded continuously, how long would it take to triple the amount?

30.  $g(x) = -\log_2(x-1)$

Asymptote \_\_\_\_\_

$x \rightarrow \text{_____}, f(x) \rightarrow \text{_____}$

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